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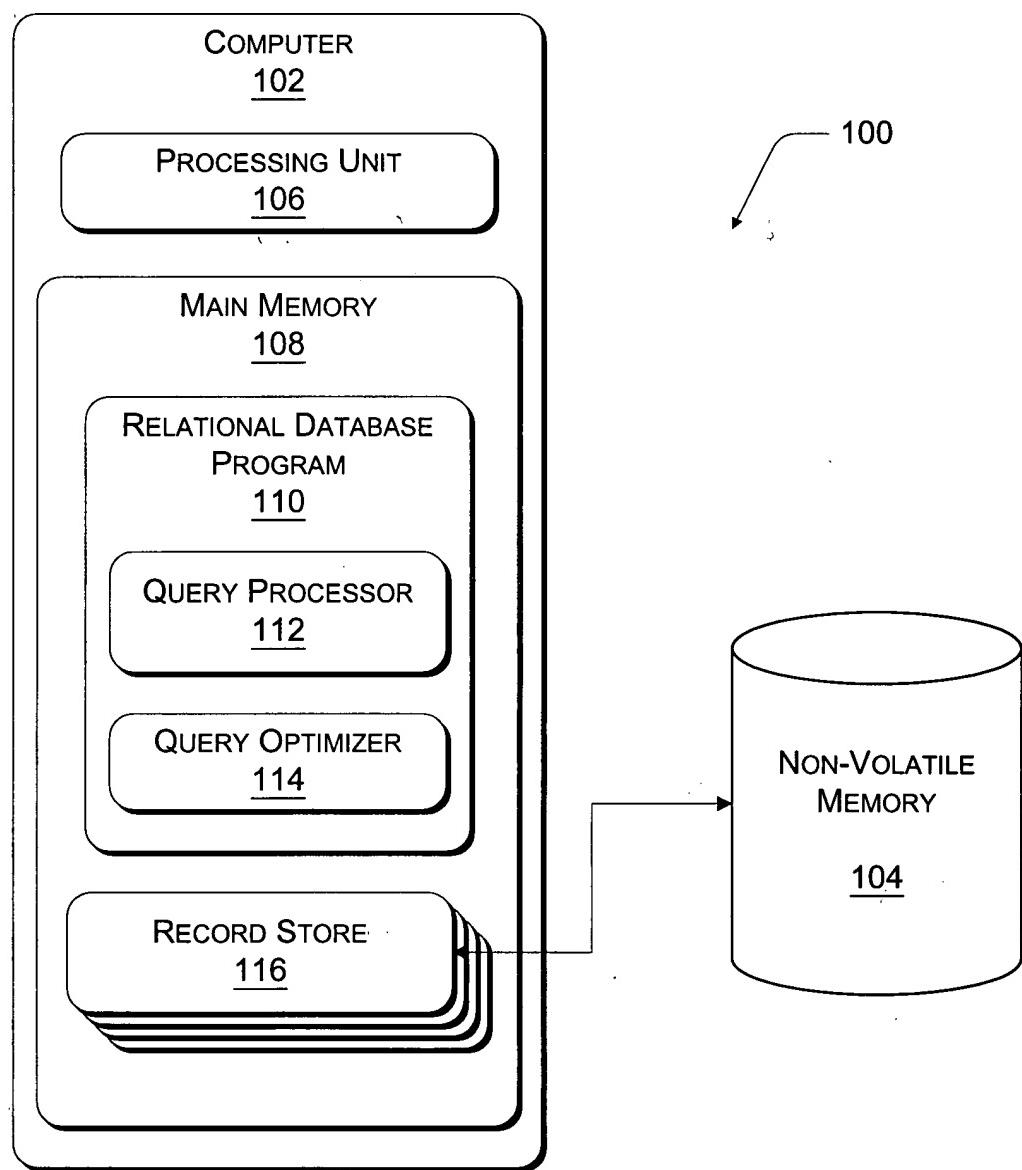


Fig. 1

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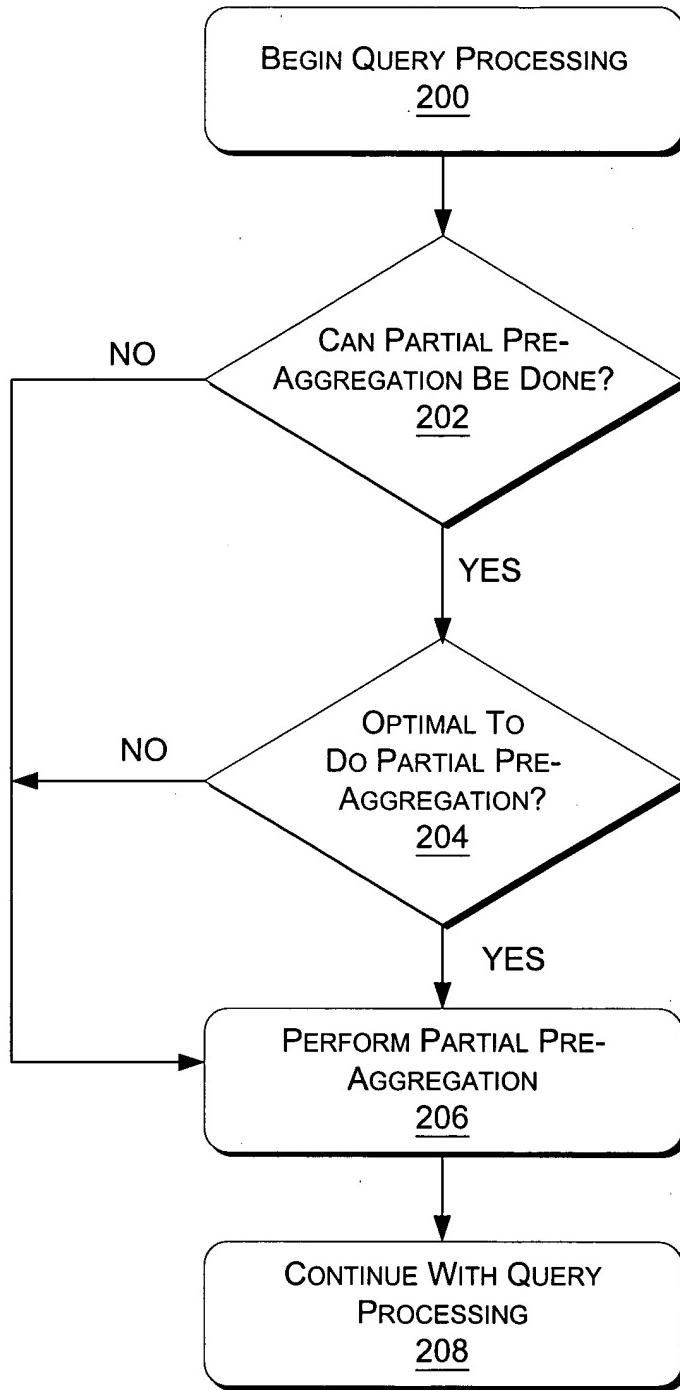


Fig. 2

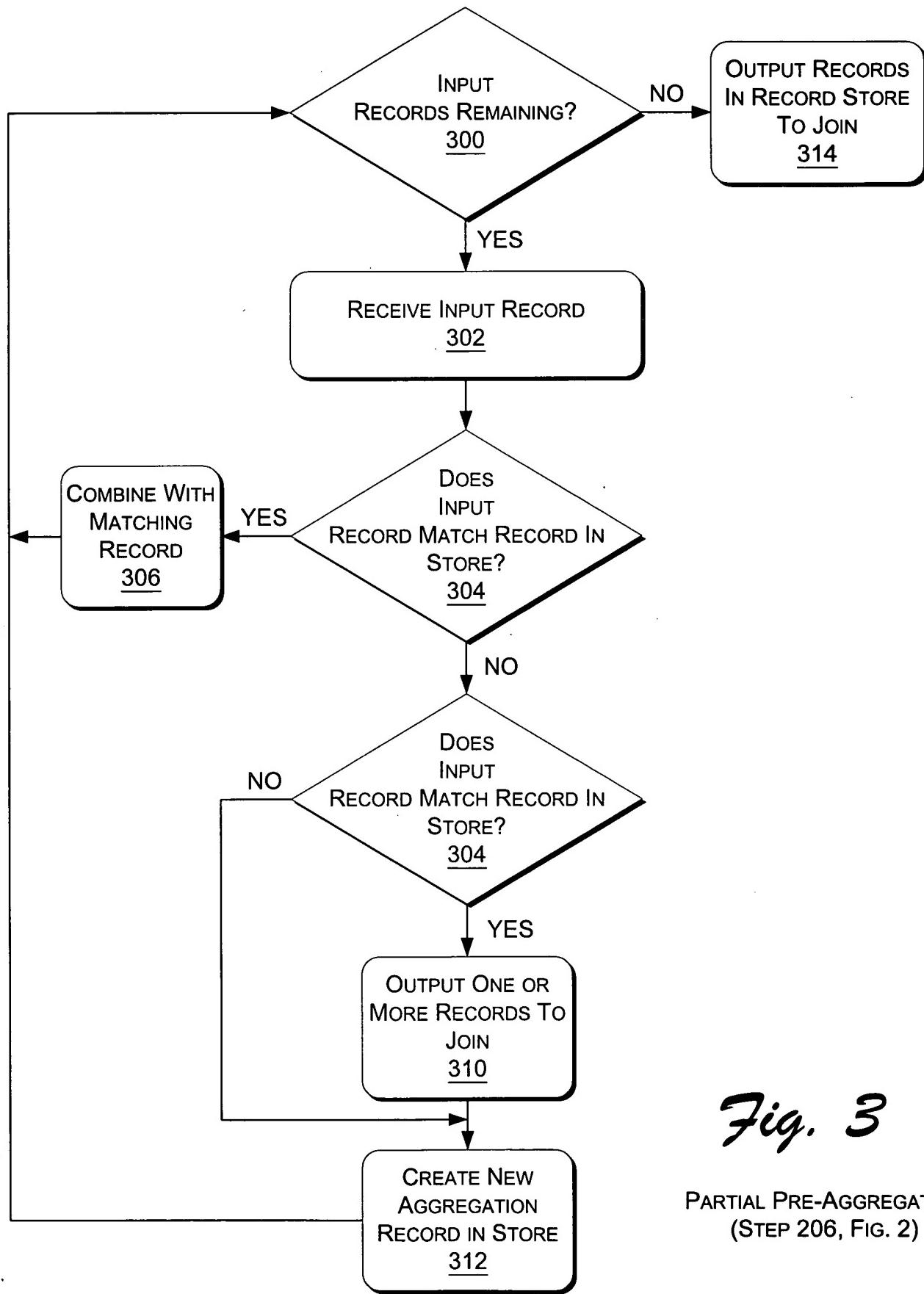


Fig. 3

PARTIAL PRE-AGGREGATION
(STEP 206, FIG. 2)

Customer Number Invoice Date Due Date Invoice Amount

	Customer Number	Invoice Date	Due Date	Invoice Amount
Record 1	9810			\$100
Record 2	9815			\$200
Record 3	9810			\$300
Record 4	9821			\$400
Record 5	9810			\$500
Record 6	9821			\$600

Sales Table
(Customer Invoices)

Fig. 4

Customer Number Customer Name Customer Contact Contact Phone

	Customer Number	Customer Name	Customer Contact	Contact Phone
Record 1	9810		Adams	123-4567
Record 2	9815		Bethard	345-6789
Record 3	9819		Gill	987-6543
Record 4	9821		Danner	765-4321

Customer Table
(Customer Contacts/Country)

Fig. 5

	Customer Number	Total Invoice Amount
Record 1	9810	\$400
Record 2	9815	\$200

602
604
606
608

First Group of Aggregation Records
Output To Join Operator

Fig. 6a

	Customer Number	Total Invoice Amount
Record 1	9821	\$1000
Record 2	9810	\$500

610
612
614
616

Second Group of Aggregation Records
Output To Join Operator

Partial Pre-Aggregation Results

Fig. 6b

	Customer Number	Customer Contact	Contact Phone	Total Sales
Record 1	9810	Adams	123-4567	\$400
Record 2	9815	Bethard	345-6789	\$200
Record 3	9821	Danner	987-6543	\$1000
Record 4	9810	Adams	123-4567	\$500

710 ————— 712 ————— 714 ————— 716 —————

702
704
706
708

Join Results

700 —————

Fig. 7

	Customer Number	Customer Contact	Contact Phone	Total Sales
Record 1	9810	Adams	123-4567	\$900
Record 2	9815	Bethard	345-6789	\$200
Record 3	9821	Danner	987-6543	\$1000

808 ————— 810 ————— 812 ————— 814 —————

802
804
806

Aggregation Results

800 —————

Fig. 8

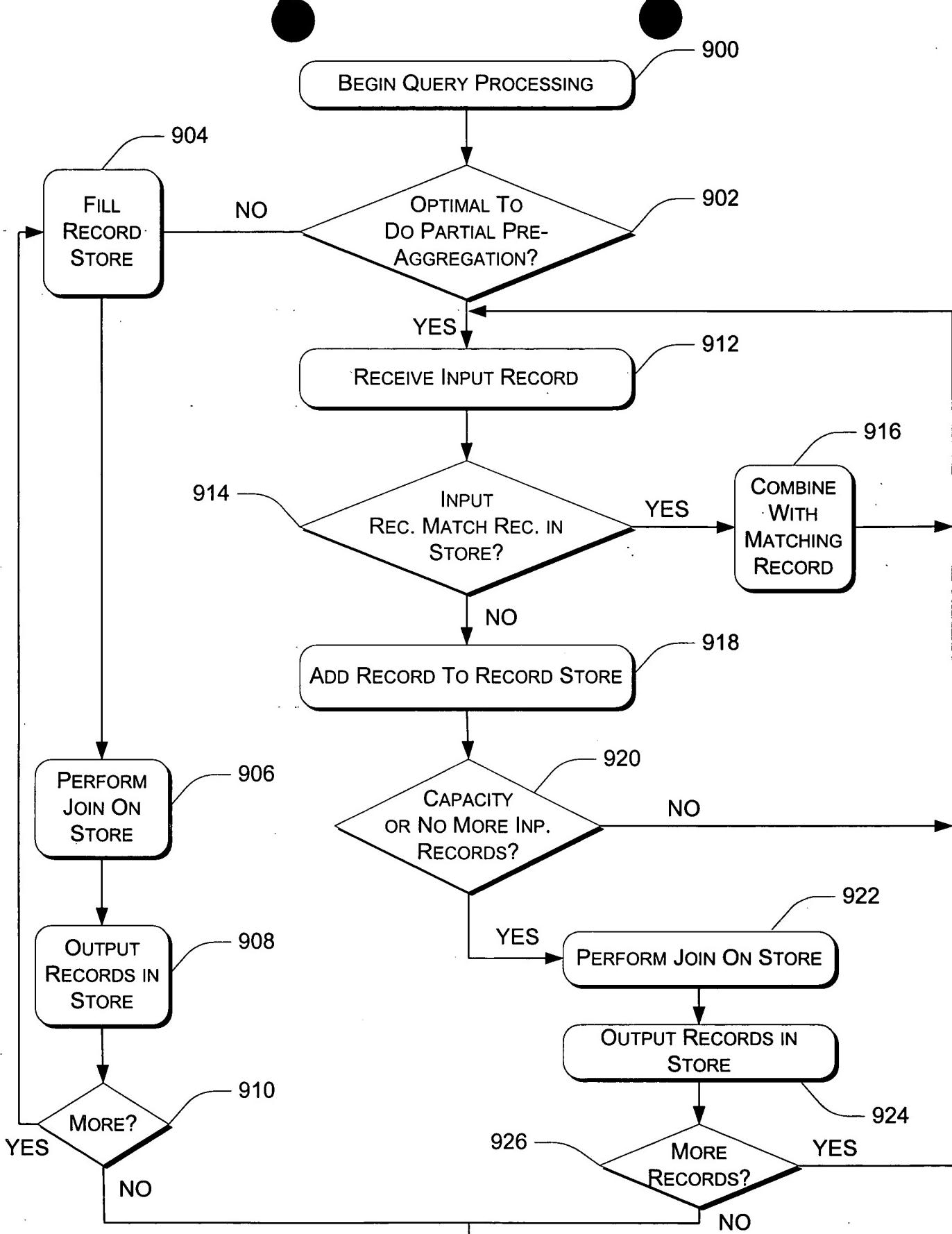


Fig. 9

	Customer Number	Customer Contact	Contact Phone	Total Sales
Record 4	9810	Adams	123-4567	\$900
Record 5	9815	Bethard	345-6789	\$200
Record 6	9821	Danner	765-4321	\$1000

986 ————— 988 ————— 990 ————— 992 —————

980
982
984

Result Of Aggregation On Records
Output From Record Store

Fig. 10